



Volunteer Lake Assessment Program Individual Lake Reports

PHILLIPS POND, SANDOWN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,006	Max. Depth (m):	5.8	Flushing Rate (yr ⁻¹)	3.7
Surface Area (Ac.):	85	Mean Depth (m):	3.1	P Retention Coef:	0.54
Shore Length (m):	2,600	Volume (m ³):	1,058,500	Elevation (ft):	212

TROPHIC CLASSIFICATION

Year	Trophic class
1977	MESOTROPHIC
1990	MESOTROPHIC

KNOWN EXOTIC SPECIES

Fanwort

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

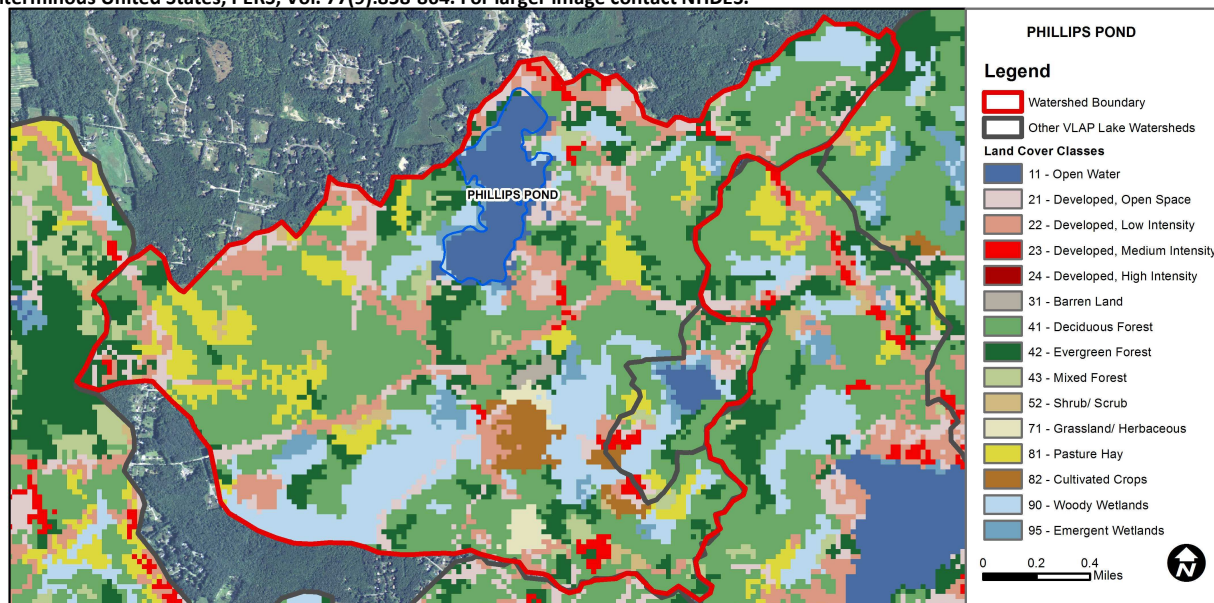
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Cautionary	There are < 10 samples with 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Cyanobacteria hepatoto	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Good	There are at least 10 samples with one, but < 10% of samples, exceeding indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

PHILLIPS POND - SEELEY TOWN BEACH	Escherichia coli	Good	There are geometric means and all geometric means are < geometric mean criteria; and there has been a single sample exceedance.
PHILLIPS POND - SEELEY TOWN BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	5.42	Barren Land	0.36	Grassland/Herbaceous	0.98
Developed-Open Space	7.18	Deciduous Forest	38.38	Pasture Hay	6.56
Developed-Low Intensity	9.29	Evergreen Forest	9.97	Cultivated Crops	1.91
Developed-Medium Intensity	1.39	Mixed Forest	1.97	Woody Wetlands	13.57
Developed-High Intensity	0	Shrub-Scrub	0.97	Emergent Wetlands	2.13



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

PHILLIPS POND, SANDOWN

2014 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels fluctuated slightly between May and September and the 2014 average level was less than the state median and the lowest measured since monitoring began! Visual inspection of historical data indicates relatively stable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride levels remained elevated and much greater than the state medians. The 2014 average conductivity and chloride levels were the highest measured since monitoring began. Visual inspection of historical data indicates relatively stable epilimnetic (upper water layer) conductivity since monitoring began.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels fluctuated slightly from May through September and average levels were slightly greater than the state median, however were the lowest measured since monitoring began! This led to the lower levels of algal growth as measured by chlorophyll-a. Visual inspection of historical data indicates relatively stable epilimnetic phosphorus since monitoring began. Hypolimnetic (lower water layer) phosphorus levels increased as the summer progressed potentially due to the release of phosphorus from bottom sediments under anoxic conditions. Inlet phosphorus levels were elevated in June and August likely due to low flow and a recent storm event in August. Metacomet Inlet and Outlet phosphorus levels were also slightly elevated in August following a significant storm event and the likely flushing of stagnant water as well as the potential influence of stormwater runoff.
- ◆ **TRANSPARENCY:** Transparency improved slightly between May and September and was the best measured since monitoring began! The lower algal growth contributed to the better transparency. Transparency measured with the viewscope (VS) was much better than without and likely a better representation of water clarity. Visual inspection of historical data indicates relatively stable transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic turbidity was elevated May through August and above average for that station. The lower levels of algal growth indicate that algae was not the cause of the elevated turbidity, however pond water color may have been darker in 2014 which could influence turbidity. Sources impacting water color include wetlands and the decomposition of plant material which could also have led to the lower epilimnetic pH measured in 2014. Hypolimnetic turbidity was greatly elevated in August and it was noted that the sample had a large amount of sediment in it, and this also caused the hypolimnetic phosphorus to be greatly elevated. We suspect that the pond bottom was hit with the Kemmerer bottle or anchor and the sample was contaminated with bottom sediment and not representative of actual hypolimnetic conditions therefore the results were invalidated and not used in reporting. Metacomet Inlet turbidity was slightly elevated in August following the significant storm event.
- ◆ **pH:** Epilimnetic and Metacomet Inlet pH was lower than desirable in May potentially due to the effects of snow and ice melt. Epilimnetic pH improved to within the desirable range of 6.5-8.0 units June through August, however average epilimnetic pH was lower than historical averages. Visual inspection of historical data indicates relatively stable epilimnetic pH. Hypolimnetic pH was less than desirable May through August. When pH levels decrease below 6.5, it could be potentially critical to the reproduction and survival of aquatic life.
- ◆ **RECOMMENDED ACTIONS:** Conductivity and chloride continue to be elevated and much greater than the state medians likely due to road, driveway and parking lot winter salting practices. Encourage local road agents, winter maintenance companies and watershed residents to follow best practices when utilizing winter de-icers and to obtain a Voluntary NH Salt Applicator License through UNH's Technology Transfer Center's Green SnowPro Certification program. Deep spot chlorophyll and phosphorus levels were the lowest measured since monitoring began and we hope to see this continue! Continue educating watershed residents on utilizing phosphate free fertilizer and ways to reduce stormwater runoff from their properties utilizing DES' "NH Homeowners Guide to Stormwater Management". Keep up the great work!

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: > 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

E. coli: > 406 cts/100 mL – surface waters

Turbidity: > 10 NTU above natural level

pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

Station Name	Table 1. 2014 Average Water Quality Data for PHILLIPS POND								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	11.4	3.50	47	224.4	14	2.04	2.92	2.24	6.66
Hypolimnion				207.1	21			4.38	6.42
Inlet			38	210.7	31			1.39	6.59
Metacomet Inlet			71	288.5	21			1.23	6.13
Outlet			44	198.8	18			1.15	6.34

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	N/A	Ten consecutive years of data necessary for analysis.	Chlorophyll-a	N/A	Ten consecutive years of data necessary for analysis.
pH (epilimnion)	N/A	Ten consecutive years of data necessary for analysis.	Transparency	N/A	Ten consecutive years of data necessary for analysis.
			Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary for analysis.

